Space Weather Forecast

Issued on Thursday, 08 June 2023 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate flares (R1/Minor-R2/Moderate radio blackouts). Slight chance of a G1/Minor Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity: Solar activity has been Moderate, with a Moderate flare observed at 07/1146 UTC. There has also been two larger Common-class flares observed in the period. A moderately large and complex region in the southeast has been the primary source regions for this activity. There are currently 11 sunspot regions on the disc, but only 3 are of significant complexity to produce significant flaring, and one of these appears to be in decay.

A Coronal Mass Ejection (CME) was observed leaving the sun around 07/0600 UTC. Analysis suggests the CME is fairly narrow and behind Earths-orbit. Another CME, associated with the Moderate flare at midday was seen leaving the southwest quadrant, analysis is currently ongoing but this is also thought to be non-Earth directed.

Solar Wind / Geomagnetic Activity: The solar wind speed has been slow over the past 24 hours, with the total magnetic field strength predominantly weak, and only weak variations in the important north-south component. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected, with a chance of further Moderate-class flares and a very slight chance of isolated Strong-flares.

Solar Wind / Geomagnetic Activity: Glancing CME impacts are possible day 1 (8th) and less likely on days 3 and 4 (10th and 11th). Otherwise, ambient solar winds are expected to become slightly elevated or elevated on days 3 and 4 (10th and 11th) due to the arrival of coronal hole fast winds. Geomagnetic activity is forecast to be initially Quiet to Unsettled, with a chance of Active intervals and a slight chance of a Minor Geomagnetic Storm, should Earth see any CME enhancement on day 1 (08th). On days 3 and 4 (09th and 10th) activity is likely to become Quiet to Active, with a slight chance of Minor Geomagnetic Storm intervals due to the arrival of coronal hole fast winds, perhaps coupled with CME influences.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels. However, there is just a very slight chance of reaching the S1/Minor Storm threshold should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	5	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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